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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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LADAS & PARRY
5670 Wilshire Boulevard, Suite 2100
Los Angeles, CA 90036-5679

EXAMINER

MENEFEE, JAMES A

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| ART UNIT | PAPER NUMBER |
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2828

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/838,676

Applicant(s)

HAYES, ROBERT R.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.



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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response

This action is in response to the response filed 16 June 2003. Claims 1-26 are pending.

Drawings

The corrected or substitute drawings were received on 16 June 2003. These drawings are acceptable.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are as follows: There is not disclosed any means of generating laser emission in the structures. The structures include "a laser cavity producing laser light", but there is nothing in the structures that suggests that this will be the case, i.e. there is no active medium that will generate light. Thus, lacking this essential element, it is unclear whether the laser will function properly.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 9, 11, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Scalise et al. (US 5,475,703). See the abstract.

Regarding claims 1 and 9, Scalise discloses a laser cavity comprising an electrically sensitive material and having a length dimension and a width direction, the cavity producing a laser light propagating substantially parallel to the length dimension of the cavity. There are further means for applying a uniform electric field across said cavity, said electric field propagating substantially perpendicularly to the direction of the propagation of laser light, and having substantially the same intensity along a length dimension of the cavity at any one point in time.

Regarding claim 2, the means for applying the electric field are not explicitly stated as a traveling wave structure, however by definition the electric field is formed as a traveling wave. The means are equal to or larger than the cavity.

Regarding claim 3, the traveling wave structure comprises electrodes with the cavity disposed there between.

Regarding claims 6, 11, and 13, the laser cavity is pumped from the side.

Regarding claim 15, the signal in the traveling wave structure is further an RF signal.

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Claims 1-3, 5-7, 9-11, 13-15, 18, 20-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Wight et al. (US 5,082,342). Wight discloses the claimed invention as follows:

Regarding claims 1 and 9, Wight discloses a laser cavity comprising an electrically sensitive material and having a length dimension and a width direction, the cavity producing a laser light propagating substantially parallel to the length dimension of the cavity. There are further means for applying a uniform electric field across said cavity, said electric field propagating substantially perpendicularly to the direction of the propagation of laser light, and having substantially the same intensity along a length dimension of the cavity at any one point in time.

Regarding claim 2, the means for applying the electric field are not explicitly stated as a traveling wave structure, however by definition the electric field is formed as a traveling wave. The means are equal to or larger than the cavity.

Regarding claim 3, the traveling wave structure comprises electrodes with the cavity disposed there between.

Regarding claims 5, 10, and 21, the laser cavity is a semiconductor structure.

Regarding claims 6, 11, 13, and 22, the laser cavity is pumped from the side.

Regarding claims 7 and 14, lithium niobate may be included in the cavity.

Regarding claim 15, the traveling wave structure further includes RF signals.

Regarding claims 18 and 24, the limitations are disclosed as in the above rejections, and further there is an integrated interferometer, thus there are longitudinally coincident gain and phase sections.

Regarding claim 20, it is not explicitly disclosed that the traveling wave structure is terminated by an open circuit. However, Shipman shows on at least one side of the cavity the electrode stops at the edge of the external cavity, similar to that disclosed by the applicant, thus describing an open circuit.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scalise in view of Donon (previously cited US 4,258,335). Shipman discloses the limitations of the claims as shown above, but it is not disclosed that the traveling wave structure comprise a transmission line. Donon teaches a means for exciting a laser medium including transmission lines (abstract, background). It would have been obvious to one skilled in the art to use transmission lines to excite the laser medium as a matter of obvious engineering design choice, as transmission lines provide good excitation and may replace the electrodes of Scalise.

Claims 8, 12, 17, 23, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wight. Wight discloses the claimed invention as shown above, but does not disclose the following:

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Regarding claims 8, 17, and 23, it is not disclosed that the cavity includes an index grating. Laser cavities are well known to include index gratings as a means for selecting a wavelength of the cavity. It would have been obvious to one skilled in the art to include an index grating so that one may change the wavelength of the emitted light, as is well known.

Regarding claim 12, it is not disclosed that the laser is end pumped. End pumping of laser mediums is well known in the art. It would have been obvious to one skilled in the art to end pump the laser medium as a matter of obvious design choice, as this pumping provides an effective means of pumping a laser, as is well known.

Regarding claim 25, it is not disclosed that the traveling wave structure comprises the structures as claimed. However, such structures are well known in the art as usable as electrodes. In fact, applicant states on p. 14 that microwave striplines are well known in the art. Such electrodes will provide an equivalent operation of the device. It would have been an obvious art known substitution of equivalents to use any of these well known electrodes in place of the electrodes of Wight.

Regarding claim 26, it is not disclosed the traveling wave structure is tapered with the maximum width adjacent to the cavity. However, changes in shape have been held to be obvious. It would have been obvious to one skilled in the art to change the shape of the traveling wave structure of Wight absent any evidence that the shape in the claim is significant.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wight in view of Laakmann (previously cited US 5,602,865). Wight discloses the limitations of claim 18 as shown above, but does not disclose that the traveling wave structure is terminated by an external

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impedance device having impedance equal to the characteristic impedance of the traveling wave structure. Laakmann teaches that it is well known to utilize feedback so that the impedances as claimed are matched, i.e. an effective external impedance will terminate the traveling wave structure. It would have been obvious to one skilled in the art to include such an external impedance because it improves the efficiency and stability of the laser, as taught by Laakmann.

Response to Arguments

Applicant's arguments filed 16 June 2003 have been fully considered but they are not persuasive. Applicant made the following arguments:

Applicant argues that the Examiner is engaging in "improper piecemeal prosecution" (p. 2 and 4 of response). While the Applicant is correct that it is encouraged by the Office to avoid improper piecemeal prosecution, there is nothing to preclude making a new rejection of non-amended claims in a subsequent office action. There is no statutory basis for the Applicant's argument, nor is there any basis in case law. The goal of the Patent Office is to issue valid enforceable patents, and if claims do not comply with the statutes then a rejection must be made, no matter where the application is in its prosecution. The Examiner reserves the right to make any rejection deemed appropriate at any time during the prosecution. It is quite common for an Examiner to make a new rejection of non-amended claims after further consideration of the case. The Examiner even has the power to reject claims previously indicated as allowable if upon further consideration such a rejection is appropriate. In this case, making the new rejections in the previous action prevented the previous action from being made final, and it was not. This is additionally the case in this action. While it is preferable to make all relevant rejections in the

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first action on the merits, the Patent Office will not withhold from making a rejection simply because it should have been made earlier. Would the Applicant prefer that the Examiner withhold from making a valid rejection because of this supposed “piecemeal prosecution”, thus issuing a weak patent that is not enforceable? This claim that the prosecution is improper is noted, but is disregarded.

Applicant argues that the rejection under 35 U.S.C. 112 is improper (p. 2-3 of response). The Examiner disagrees. Applicant argues that a “rejection under 35 U.S.C. 112, second paragraph, must be based upon a failure to interrelate essential elements, not upon an alleged omission of essential elements.” In this case, the MPEP appears to be ambiguous. MPEP 2172.01 states that in such an instance a rejection should be made under 35 U.S.C. 112 first par. However, the MPEP form paragraphs state that the rejection should be made under 35 U.S.C. 112 second par. See MPEP form paragraph 7.34.13. Since the MPEP states that the rejection may be made in either manner, then the rejection under 35 U.S.C. 112 second paragraph is deemed proper. Common sense dictates that if an essential element is not included in the structure, then the claim is indefinite in that it is claiming a device without including the necessary structure for that device to exist. In this case, a laser is claimed; however, a laser necessarily must include some type of gain element. A claimed laser without a gain element is not really a laser at all, so what is the applicant claiming? The rejection under indefiniteness is thus upheld.

Applicant argues that the omitted essential elements are not essential because the essential elements are not “described by the applicant(s) as necessary to the invention.” Even if the applicant does not explicitly disclose that the elements are essential, in this case it is implied.

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One skilled in the art reading the specification would know that in order for the laser to be a laser, there must be some gain medium that will perform the lasing action. Without such a medium, one skilled in the art would realize that such lasing action would not take place, thus the element is deemed essential to the invention.

The arguments relating to the prior art are persuasive and the rejections have been withdrawn, but such arguments are moot in light of the new ground of rejection above.

Conclusion

The prior art cited but not relied upon is pertinent to the claimed invention. The references show lasers that are excited by uniform electric fields as in the present invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JM

August 20, 2003



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